



APPLICATION OF COMPUTER ASSISTED COLPOSCOPY EDUCATION

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## ABSTRACT

The Papanicolaou test is a commonly performed screening test often requiring further investigation by colposcopy if abnormal results are obtained. Women are often apprehensive regarding the abnormality that may exist and what occurs in the follow-up. Education plays a vital role in health care expectations and follow-up compliance. Various educational tools exist to facilitate improved knowledge. Computer technology may represent an additional avenue to enhance patient education and comprehension. The purpose of this study was to establish the effectiveness of computer-assisted instruction on dysplasia and colposcopy. The quasi-experimental study measured the participants' knowledge before and after the computer assisted-instruction (CAI) intervention via a ten-item pre- and post- multiple choice exam. Estimates of content validity, obtained using three experts in colposcopy resulted in a CVI of one after revisions. There was 95% agreement in the test-retest of the tool at one week. The participants' perception of the usefulness of the computer-assisted instruction was assessed with a nine-item survey accomplished after the colposcopy procedure. Subjects consisted of a non-random convenience sample of 27 first time colposcopy patients attending a specialty clinic at a military treatment facility. Using the paired *t*-test, significant pre- and post-test differences were found for six of the 10 items and for the total exam, suggesting the use of CAI as a valuable patient education tool for dysplasia and colposcopy. The unanimous recommendation by the participants for this type of program for future use suggests user friendliness and high satisfaction with this modality.

Key words: **colposcopy education, computer-assisted education, dysplasia**

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by

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## **PREFACE**

This research was conducted to provide information on the usefulness and effectiveness of computer assisted patient education for colposcopy patients. The focus of this study was to determine if computer assisted instruction effectiveness on comprehension as well as the patient's perceptions of this tool's usefulness. It was designed to provide information for a population in which there is very little published research and to add to the current body of knowledge.

## **DEDICATION**

Graduate school has made Phillipians 4:13: "I can do all things through Christ who strengthens me" even more near and dear to my heart!

Family and friends have made this seemingly overwhelming goal in my life a reality. Grateful appreciation and love goes to my husband Dennis who suspended his own career goals to be the stabilizing force of our family. To our children DJ & Dayla, words cannot tell how important and encouraging your faces and unconditional love for me was despite my absences from home and the stressful occasions academic life offered.

To Mom and Dad Decker, who have instilled a strong work ethic and desire to succeed. Your encouragement, love, and support throughout my life have been the basis of my achievements.

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## CHAPTER I: INTRODUCTION

### Background

The Papanicolaou (Pap) test is commonly performed to detect abnormal cervical cells in women, and abnormal Pap results frequently result in follow-up utilizing colposcopic evaluation and possible treatment. Women requiring colposcopy are often frightened both from lack of knowledge about what is wrong with their cervix and from what the colposcopy examination entails (Howells et al., 1999). Patient education is an essential nursing function because patients are frequently poorly informed about the treatment options. Studies have shown that patient involvement in health care decisions leads to better outcomes with a better quality of life (Shepperd, Coulter, & Farmer, 1995). Health educators and providers have used pamphlets, books, videotapes, classes, support groups, and other educational tools in the hope that knowledge will be improved for the patient. Computer technology may represent an additional avenue to enhance patient education and comprehension. Several computer-assisted instruction (CAI) programs have been shown to be an effective means of educating patients (Lewis, 1999).

### Nursing and Military Relevance

There are numerous benefits to the military and nursing communities if computer-assisted instructions were to be routinely utilized for patient education. Patients benefit by having self-paced, written information available to them at their convenience. Potential advantages of CAI include improved patient comprehension regarding the importance of follow-up after an abnormal Pap



result, and thus improved compliance with that monitoring. Additionally, an increase in understanding of colposcopy and cervical dysplasia may alleviate the fears of the patient as well as her family members, making for an emotionally stable active duty work force. The comprehension of the abnormalities and follow-up and alleviation of fears may translate into individuals more focused on their job.

Decreased anxiety and less questions related to the upcoming procedure and follow-up care may also offer providers a potential timesaving in schedules. Because consistent information is given to each patient using the CAI module, the health educator can focus on patient-directed questions instead of giving general information. Hence, the implementation of this program if proven effective, may conceivably benefit the patient, the patient's family, the health educator, and the provider as well as the medical treatment facility.

#### Purpose of Study

The purpose of this study was to compare the knowledge level of the patient prior to and after completion of computer-assisted instruction and to determine the patients' perception of the usefulness of CAI in colposcopy education. In an attempt to establish the effectiveness of computer-assisted instruction for the first time colposcopy patient, this study sought to answer the following two questions:

1. Is there a difference in patient knowledge of dysplasia and colposcopy before and after completion of computer-assisted instruction on dysplasia and colposcopy?
2. What is the patient's perception of the usefulness of this type of instruction?

### Theoretical Framework

The nursing theories that formed the organizing framework for this study included both Orem's (1995) model of self-care and the adult learning theory. Orem's model contains therapeutic self-care actions, which contribute to several health goals including the prevention, control and cure of disease processes and injuries. A self-care theoretical approach is person centered, and places increased emphasis on the consumer of health care services. Orem believes that self-care is an adult's continuous contribution to his or her own existence, health, and well being. Self-care is described as a deliberate action which is goal or result seeking. Nursing care through education facilitates resumption of self-care and well being. This theory is relevant to the colposcopy patient; the proactive individual has demonstrated self-care by having the Papanicolaou smear done and the self-care deficit is apparent because of the need for colposcopy.

Adult learners are self-directed people who are responsible for their own lives and who need to be recognized as such. They have varied life experiences, are internally motivated, and have their own goals when seeking information therefore requiring individualized instruction (Slotnick, Pelton, Fuller, & Tabor, 1993). The adult learning theory involves individual participation, responsibility, and flexibility for optimal comprehension; computer-assisted instruction offers all three of these elements to the patient. It is the individual's choice and responsibility to complete the colposcopy and dysplasia CAI that can occur at a time convenient and optimal to the individual.

## Definitions

The independent variable of this study was the computer-assisted patient education program.

The dependent variables in this study were the patient's comprehension of dysplasia and colposcopy information as demonstrated through their responses on a ten item multiple choice exam, and the patients' perception of the usefulness of the computer-assisted instruction as demonstrated by their responses on a nine item usefulness of CAI questionnaire.

### American College of Obstetricians and Gynecologists (ACOG)

The professional association of certified obstetricians and gynecologists, which developed the computer-assisted instruction tool used in this study

### Computer-assisted instruction (CAI)

The use of computers in educating patients.

### Colposcopy

The examination of the tissues of the vagina and cervix with a magnifying lens.

### Dysplasia

The cellular deviations from the normal in the epithelium of the uterine cervix as noted by a pathologist

### Patient knowledge

The patient's ability to understand or comprehend the information presented

### Pre-test

An exam given to the patient before completing the CAI

Post-test

An exam given to the patient after completing the CAI

Assumptions

This study assumed that variability exists in the description and instruction of colposcopy education provided to the patient by various clinicians and health educators. Another assumption of this study was that patients desire information regarding their health care. It was assumed that participants are honest in their responses.

Limitations

This study was limited by the sample size. Another limiting factor was that the population consisted only of individuals qualified for military medical care served by the participating military treatment facility potentially limiting generalizability of the findings. The pre-/post-intervention design allowed for less generalizability of findings when compared with a randomized, controlled study. Language, age, and a literacy level of seventh grade also limited the study. The comfort level of the participant with computer utilization was another potential limiting factor.

## CHAPTER II: REVIEW OF LITERATURE

### Introduction

This chapter presents a review of the literature related to computer-assisted instruction (CAI) and colposcopy patient education. Authorities uniformly agree that patient comprehension of education regarding a current disease process or an upcoming medical procedure will do the following: enhance patient compliance for follow-up, reduce stress associated with aversive procedures, increase patient knowledge, decrease anxiety, and encourage patients to become more active in their own health management (Barsevick & Lauver, 1990; Bensen, et al., 1992; Eger & Peipert, 1996; Tomaino-Brunner, Freda, Damles, & Runowicz, 1998). The goal of this research study was to compare patient comprehension of information on dysplasia and colposcopy prior to completion of CAI with that of the patient after completion of the CAI.

### Studies Relevant to Computer-Assisted Instruction

According to Coffman (1996), adult learners enter an educational situation with a wide variety of backgrounds and experiences, have different learning styles, and learn best when they are able to select from a variety of learning modalities. They also have a psychological need to be self-directing and competent. The use of CAI provides self-paced learning, a private learning environment, and immediate feedback regarding the learning that has occurred (Lewis, 1999).

Computerized education methods often facilitate learning because they offer the patient easily understood vocabulary along with consistency in the delivery of

new information (Krishna, Balas, Spencer, Griffin, & Boren, 1997). Patients also perceive that computers deliver credible and current information on health education. This type of education coupled with a face-to-face encounter with a health educator is synergistic for patient comprehension of the specific health care deficit (Cooling, 1997).

#### Studies Relevant to Computer-Assisted Patient Education

Studies performed on patients with different health problems such as diabetes, rheumatoid arthritis, hyperlipidemia, sexually transmitted diseases, nocturnal enuresis, and asthma have shown high levels of satisfaction with computer-based programs and improved knowledge among the participants (Bensen et al., 1999; Lewis, 1999). Lewis (1999) noted CAI to be effective for persons across the age continuum. Even patients with low literacy skills also benefited from the self-paced instruction and non-threatening learning environment provided by the computer-based instruction (Pernotto, Bairnsfather, & Sodeman, 1995). This type of education also enhances patient and provider communication (Lewis, 1999). Some patients may feel unable to adequately express themselves regarding specific questions during a frequently time-constrained provider encounter and after completing CAI, these patients are able to collect their thoughts and questions prior to the provider encounter (Krishna et al., 1997).

In a review of the literature by Lewis (1999), 17 of 21 research-based studies demonstrated a significant change in patient outcomes among those who participated in CAI, with effect size ranging from 0.53 to 1.91 ( $p < .05$ ). The following studies were included in the review of literature. In the study by Wise,

Dowlatshahi, Farrant, Fromson, and Meadows (1986), the two diabetic education computer-based programs were evaluated against controls. The CAI programs consisted of an interactive computer teaching (ICT) program with text and animated graphics and a multiple-choice knowledge-assessment program (KAP). One hundred seventy-four non-insulin-dependent diabetes mellitus (NIDDM) and insulin-dependent diabetes mellitus (IDDM) patients were randomly divided into control and active groups to test the effect of CAI on knowledge and glucose control after a 4-6 month follow-up period. ICT groups had a significant knowledge increment in the IDDM and NIDDM groups with a mean fall of .8% and .7% respectively in HbA1c ( $p < .05$  and  $p > .1$ ) compared with no changes noted in the classified control groups. The KAP with feedback demonstrated similar results in both the IDDM and NIDDM patient with a mean fall in HbA1c of 1.2% and 1.3% respectively ( $p < .05$ ), again with no change in the control groups. These results confirmed the positive education benefit of these computer-based educational programs through knowledge enhancement.

One hundred five diabetic patients divided into two randomized groups participated in a six-month study to evaluate Diabeto, a computer-assisted diet education system (Turnin et al., 1992). Evaluation of the control group versus the CAI group was based on dietary habits, dietetic knowledge, and metabolic balance. The CAI group demonstrated a significant improvement of dietetic knowledge ( $p < .0005$ ), decreased caloric intake in patients initially overeating ( $p < .05$ ), increased dietary carbohydrates from 39.7  $\pm$  .7 to 42.9  $\pm$  .9% with an initial intake  $<45\%$  and decreased fat intake from 41.9  $\pm$  .9 to 37.4  $\pm$  1.1% for

patient's with an initial intake of >35% fat ( $p < .0005$ ). A second, six-month study (Turnin et al., 1992) utilizing the CAI obtained similar results. HbA1c decreased from 11.0  $\pm$  .4 to 9.9  $\pm$  .4% and fructosamine from 5.0  $\pm$  .17 to 4.57  $\pm$  .17% ( $p < .001$ ).

Patient knowledge utilizing CAI in 18 rheumatoid arthritis sufferers was compared to 17 sufferers in a control group via pre- and post-test scores. There were no pre-test scores differences between the two groups. After a 34 day period, the post-test scores demonstrated an increase in knowledge from 19.8 out of 30 (65%) to 24 out of 30 (80%) ( $p < .004$ ) in the CAI group while there was no change in the control group's pretest score of 19.2 out of 30 and a post-test score of 19.5 out of 30 (Wetstone, Sheehan, Votaw, Peterson, & Rothfield, 1985).

Leirer, Morrow, Pariente, and Sheikh (1988) found a decrease among 16 elderly adults in nonadherence to medication from 32.0% to 10.0% following CAI on medication recall (Effect Size of 1.14). These results suggested that memory failure is a major factor contributing to nonadherence and that CAI medication recall training can reduce this nonadherence.

Madoff, Pristach, Smith, and Pristach (1996) compared CAI and traditional education on 55 psychiatric patients' compliance for three months. They found comparable mean pre-instruction test scores, but the CAI group had significantly higher scores on post-tests ( $p < .001$ ). The results suggested CAI improved knowledge retention and medication compliance in this population.

As demonstrated by the significant findings of these studies, computer-based instruction has a favorable impact on clinical outcomes, self-care management,



and skill development by those who use this medium. However, no studies were found specifically addressing the use of CAI in the areas of dysplasia or colposcopy patient education.

#### Studies Relevant to Colposcopy Patient Education

The importance of patient education related to dysplasia and colposcopy is widely documented. McKee, Lurio, Marantz, Burton, and Mulvihill (1999) found women "who did not know the results of the Papanicolaou smear or who incorrectly misunderstood their results were significantly less likely to return for colposcopy ( $p = 0.001$ )".

Primary care practitioners play an important role in helping patients understand the need for follow-up. Education stressing the seriousness of inadequate follow-up care must be conveyed, along with reassurance to the patient that with treatment and proper compliance, cervical cancer can be avoided (Ferreira, 1998).

#### Patient Reactions to Abnormal Results

Lauver and Rubin (1991) reported one to three percent of the overall population of women screened with pap tests have cervical intraepithelial neoplasia. Ten to 30% of women have the human papillomavirus (HPV), which often acts as a precursor for cervical cancer. In their study of 116 women whose Pap tests suggested precancer, the patient reactions immediately after receiving results of an abnormal pap test demonstrated concern regarding further evaluation (36.2%) and additional information was requested regarding the common causes of the abnormality (33.3%). Patient reactions were again evaluated at the time of

the colposcopy, and more than half of the participants (54.2%) discussed concerns about the seriousness or future implications of the abnormal findings. Women wanted not only information about the causes and implications of abnormal results, but also about future follow-up procedures and plans.

Gath, Hallam, Mynors-Wallis, Day, and Bond (1995) found that 51% of the 102 women in their study on the emotional impact of the abnormal pap described their response as "shock," "panic," or "horror" during the first week after receiving the notification. Ninety percent discussed fear and worry of cancer and need for hospitalization as their greatest concern, 67% had depressed moods, 65% reported pessimism, 44% had poor concentration, and 43% told of irritability. Thus, the availability of pertinent patient information that is easily accessed is an important factor to women.

#### Level of Knowledge

"If women were more knowledgeable about this entire experience, and especially regarding the progressive relationship between early cervical cell changes and cervical cancer, their understanding of their plan of care and need for adequate follow-up may be enhanced" (Nugent & Tamylyn-Leaman, 1992, p.514). The Nugent and Tamylyn-Leaman study examined the knowledge of first-time colposcopy patients regarding pap results and colposcopic examinations using a level of knowledge questionnaire. The 149 first-time colposcopy patients in this study scored poorly in the areas of female anatomy, sites of sampling for a pap, and reasons for the colposcopy. Thirty-two percent had no knowledge of the primary purpose for colposcopy. They also didn't know that more than one

biopsy may be required (81%) and the procedure involved inspection of the labia (78%). Almost three-fourths of the participants in this study were unaware that the colposcope did not actually enter the vagina.

#### Information Availability

The importance of additional available information to the patient was described by Tomaino-Brunner et al. (1998). The 58 women in the intervention group received written information by mail one week prior to their colposcopy, while the 55 women in the control group did not. When both groups were asked about how they felt about having the colposcopy, the intervention and control groups both used the words "scared" or "nervous" at 51% and 91% respectively with a  $p$  value  $< 0.0001$ . The intervention groups' most common answer after "scared" or "nervous" was "I'm worried but not too worried." Seventy-two percent of the intervention group versus 42% of the control group understood the purpose of the procedure.

#### Sources of Information

Resources sought for information on dysplasia and colposcopy vary greatly. More women in the study by Nugent and Tamylyn-Leaman (1992) got information regarding dysplasia and colposcopy from friends with prior experience than from their health care professionals. Additionally, most patients found that their friends' information was nearly as helpful as that from the specialty provider and more helpful than that received from the referring provider. Other resources actively sought by women in this study included pamphlets, woman's magazines, newspaper articles, and professional journals. Of the 107

women, 71% indicated they usually dealt with new situations by actively trying to find out all they could about it. Other comments included the desire for information before they arrived at the colposcopy clinic. The addition of written education prior to the colposcopy procedure for increasing patient knowledge has been shown to be effective (Barsevick & Lauver, 1990; McKee et al., 1999; Nungent & Tamylyn-Leaman, 1992; Tomaino-Brunner et al., 1998).

#### Inconsistency of Education

Eger and Peipert (1996) implied that the effort of the clinician regarding patient education might be related to the degree of the patient's lesion. They also indicated patients with low-grade cervical lesions were less compliant with follow-up when compared to patients with high-grade cervical lesions ( $p = 0.01$ ). What was unclear was whether the motivational factor for the patient was the more serious high-grade lesion or the practitioner's approach to the patient. Were providers taking more time to educate patients with high-grade lesions? Were they more forceful in their instruction about the need for close follow-up and possible treatment? Consistent education among various types of patients is required.

#### Summary

The literature is full of information regarding the importance of patient education and the impact on patient compliance as well as on outcomes. The usefulness of computer-assisted instruction has been shown to be advantageous in many areas of health care patient education. Although many studies have been

done examining timing, availability, and information included in colposcopy education, none were found examining the use of computer-assisted instruction in the area of cervical dysplasia and colposcopy.

Patient education is an integral part of nursing and a primary component of nursing practice. As patient advocates, nurses should provide the patient information on abnormal results, diagnostic implications, and follow-up care as well as anticipating the anxieties, uncertainties, and worries that accompany the stresses of a potential cancer diagnosis. Computer-assisted instruction could be another avenue for patients to acquire knowledge of their own health care needs.

## CHAPTER III: METHODS

### Introduction

This study sought to determine if there was a difference in the patient's knowledge of dysplasia and colposcopy after using a computer-assisted instruction on these subjects. Additionally, it sought to determine the patients' perceptions of the usefulness of this type of instruction.

### Research Design and Procedures

The cause-and-effect nature of this study lent itself to a quasi-experimental research design. According to Burns and Grove (1997), quasi-experimental studies in nursing demonstrate the nursing interventions or the independent variables effect on patient outcomes or the dependent variables. The independent variable in this study was the use of the CAI on dysplasia and colposcopy. The dependent variables were the participants knowledge as measured by the pre- and post-test and the participants' perception of the usefulness of this type of instruction.

Patients requiring colposcopy for the first time as the result of an abnormal Pap were asked to participate in this study. After receiving the informational paper, the participant completed a pre-test examining the patient's knowledge level of dysplasia and colposcopy prior to doing the CAI and then completed a post-test after receiving the CAI. The CAI occurred prior to provider education and the colposcopy procedure. The ACOG instructional CDROM (1999) entitled "Abnormal Pap Test Result: Dysplasia" was the CAI tool utilized for this study.

### Sample

The OB/GYN and Primary Care clinics at Malcolm Grow Medical Center perform the majority of the Paps that identify the need for further patient evaluation by colposcopy in the Malcolm Grow dysplasia clinic. From this clinic, a non-random, voluntary, convenience sample of 27 women scheduled for colposcopy for the first time was recruited. Inclusion criteria were that women had to be 18 years of age or older and eligible for military medical care. Additionally, participants had to read at least at a seventh grade level, speak English, and be able to use a computer. All women meeting these criteria were asked to complete the CAI with the pre- and post-tests on a volunteer basis. This sample size of 27 women was sufficient to achieve a medium effect size using a one-tailed .05 alpha level with a power of .80 (Kraemer & Thieman, 1987).

### Measurement

The CAI tool used for this study was the ACOG PACE™ CD-ROM (1999). Permission to use this program was granted by ACOG (Appendix A) and a complimentary copy was given for the purpose of this study. The program was not endorsed in any way by the Department of Defense. Information provided in this program included treatment options, risks associated with the specific procedure, and possible outcomes. It also documented the patient's interactive responses. A printed summary of information covered and items requiring further clarification from the provider prior to doing the colposcopy procedure was given to the patient upon completion of the CAI (Appendix B).

No actual post-test had been developed for the ACOG PACE™ CAI (1999). Therefore, a multiple-choice exam was created by this author as the data collection tool (Appendix C) addressing the key elements of dysplasia, colposcopy, and follow-up care. The test consisted of ten multiple choice questions written at a seventh-grade reading level and tested for readability using the Flesch Kincaid Grade Level program. An OB/GYN physician with six years colposcopic experience, a Women's Health Nurse Practitioner with three years colposcopic experience, and a Family Practice physician with four years colposcopic experience evaluated the tool, providing supporting evidence for the content validity of the exam by using a four point Likert scale to rate the degree of relevance for each question (Appendix D). Changes to the original exam were made to reflect content suggestions by these providers who then re-evaluated the exam resulting in a content validity index of one. Test-retest reliability was established for the exam tool by having ten subjects participate in the test-retest method at a one-week interval. On average, there was a 95% agreement in the test-retest responses at one week with a Kappa range from 0.067 to 0.846. A nine-item seven point Likert scale questionnaire was developed to evaluate the utility of the CAI from the participant's perspective (Appendix E). The questionnaire was completed after the colposcopy procedure. Additionally, the respondents' demographic information was requested to measure the participants' education level, time of computer use at home and at work, and comfort level with computer use (Appendix F).



### Protection of Human Rights

The proposed study was presented to the Uniformed Services University of the Health Sciences (USUHS) Institutional Review Board and the Institutional Review Board at Malcolm Grow Medical Center. Participation and completion of the questionnaire was voluntary.

An informational paper regarding the pre- and post-tests on the CAI and post-colposcopy survey was given to all eligible participants. The following instructions were included: completion of a multiple choice exam before and after performing the CAI, completion of the usefulness of the CAI questionnaire and demographic information after the colposcopy, absence of any monetary reimbursements, USUHS's sponsorship of the study, and prior review and approval of the study by the Malcolm Grow Medical Center Institutional Review Board. Participants were informed that confidentiality and privacy were maintained regarding the information they provided. No foreseeable risks or harm were associated with study participation. Participants could withdraw from the study at any time without recourse. A copy of the informational paper was provided to each participant.

## CHAPTER IV: DATA ANALYSIS

### Introduction

The purpose of this study was to determine the effectiveness and usefulness of computer-assisted instruction on dysplasia and colposcopy. In this chapter, a description of the sample and data analysis specific to each research question is addressed.

### Characteristics of the Study Sample

A total of 27 colposcopy patients volunteered for this study. Of the 23 respondents recording the number of years of education they received, 77% completed twelve years or more. The mean number of years of education was 13, with a range from three to eighteen years. Forty-eight percent of the 23 respondents rated their comfort level with computer use as a seven on a scale, with one being 'not comfortable at all' to seven being 'very comfortable,' followed by 30% rating their comfort level at a five. The range of responses for the comfort level scale was from two to seven, with a mean of 5.8 and a standard deviation of 1.44.

Table 1 describes the respondents' use of computers at home and at work.

Table 1.  
 Respondents' Reported Use of the Computer

Hours per week:	# of Respondents	Mean	Minimum	Maximum
At Home	21	6.3	0	32
At Work	21	23.0	0	50
For Recreation	18	3.8	0	12
For Education	17	4.9	0	20
For Communication	20	3.2	0	10

#### Research Question One

The first research question in this study was: Is there a difference in patient knowledge of dysplasia and colposcopy before and after completion of computer-assisted instruction on dysplasia and colposcopy?

The subjects in this study were requested to select from four response options on a ten-question exam concerning dysplasia and colposcopy both before and after completing the computer-assisted instruction. Specifically, the respondents were asked to circle the letter corresponding to the response they thought was correct at that time. Each question in both the pre-intervention test and the post-intervention test had at least one respondent who chose not to answer that particular question; therefore the percentages described reflect the valid percentages.

Table 2 demonstrates the pre-test and post-test frequencies of each answer and the valid percentages of the respondents for questions one through five.

Table 2.  
Frequency and Valid Percentages of Pre- and Post-CAI Questions 1-5

Question Number	Answers	Pre-test		Post-test	
		Frequency	%	Frequency	%
1	A	9	35	4	16
	B*	15	58	21	84
	C	2	8	0	0
	D	0	0	0	0
2	A	2	11	1	4
	B	6	32	0	0
	C	1	5	1	4
	D*	10	53	23	92
3	A	0	0	0	0
	B	11	48	4	16
	C	3	13	0	0
	D*	9	39	21	84
4	A*	21	88	25	100
	B	1	4	0	0
	C	2	8	0	0
	D	0	0	0	0
5	A	7	32	1	4
	B	1	4	0	0
	C	4	18	0	0
	D*	10	46	24	96

\* Denotes the correct item

Figure 1 graphically depicts the percentages of correct answers of the pre- and post-test questions one through five.

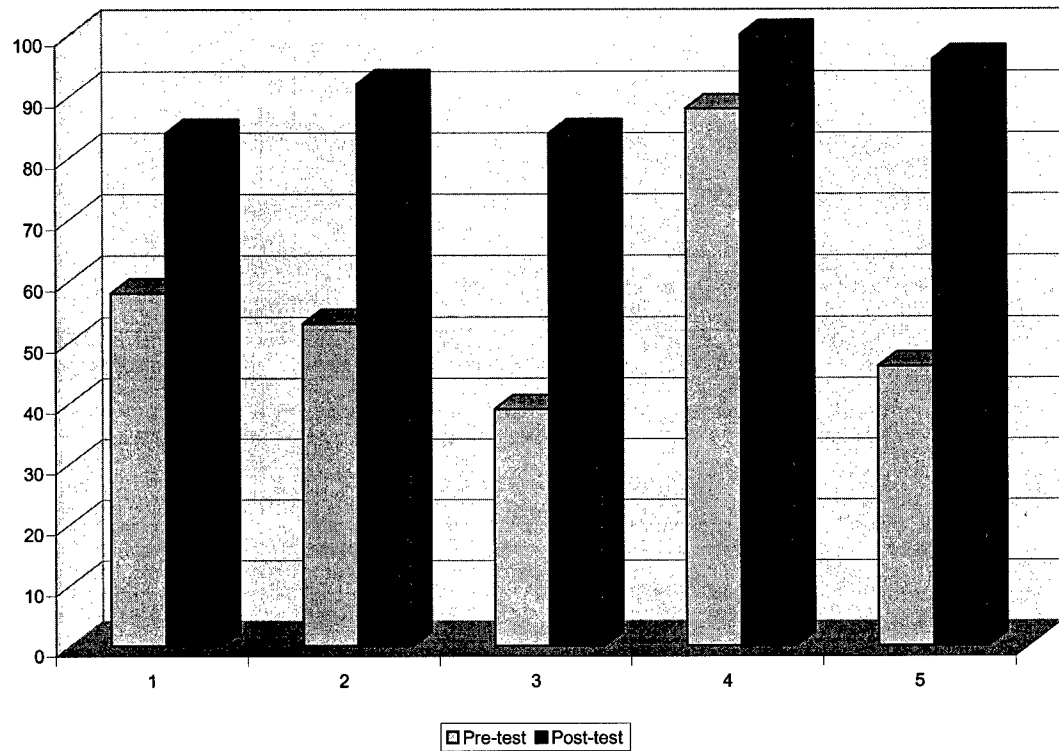


Figure 1.

Percentage of Correct Item Responses Pre- and Post-CAI for Questions 1-5

Table 3 demonstrates the pre- and post-test frequencies of each answer and the valid percentages of the respondents for questions six through ten.

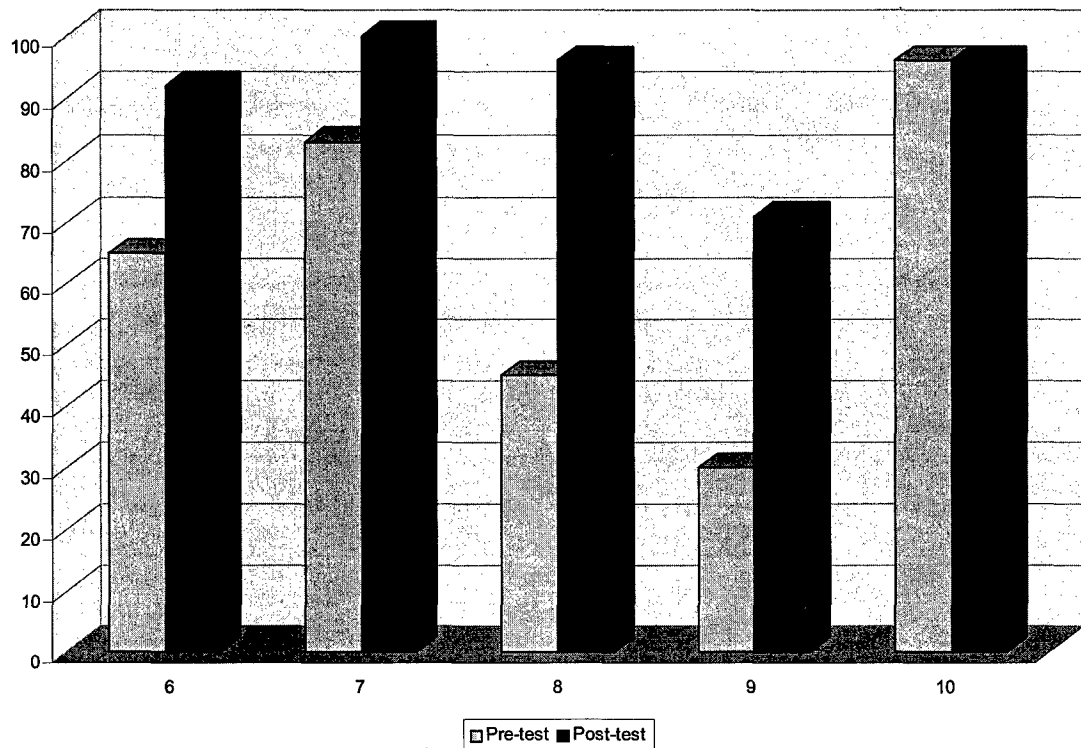
Table 3.

Frequency and Valid Percentages of Pre- and Post-CAI Questions 6-10

Question Number:	Answers	Pre-test		Post-test	
		Frequency	%	Frequency	%
6	A	7	30	2	8
	B	0	0	0	0
	C	1	4	0	0
	D*	15	65	22	92
7	A*	19	83	25	100
	B	2	9	0	0
	C	1	4	0	0
	D	1	4	0	0
8	A	9	45	0	0
	B	1	5	1	4
	C	1	5	0	0
	D*	9	45	24	96
9	A	1	5	1	4
	B	11	55	4	17
	C	2	10	2	8
	D*	6	30	17	71
10	A	1	4	1	4
	B*	22	96	24	96
	C	0	0	0	0
	D	0	0	0	0

\* Denotes the correct item

Figure 2 illustrates graphically the percentage of correct answers for questions six through ten for the pre-intervention and the post-intervention tests.



**Figure 2.**

Percentage of Correct Item Responses Pre- and Post-CAI for Questions 6-10

As noted in Tables 2 and 3 and Figures 1 and 2, the number of correct responses was higher on the post-intervention test for nine of the ten questions. The number of correct responses remained unchanged for question 10 with 96% of the respondents providing the correct answer on both testing occasions.

In order to determine if the differences between the means of the pre-test and the post-test scores were statistically significant, the data were analyzed using the paired *t*-test, with a level of significance or *p*-value of 0.05. The paired *t*-test is

useful with a small sample group in the determination of significant differences in the mean group scores on two testing occasions (Burns & Grove, 1997). Sixty percent or six of the ten questions demonstrated a significant difference between the pre- and post-test answers. Table 4 summarizes the  $t$  value and  $p$  value for each of the individual items as well as the total test scores of the pre- and post-tests.

Table 4.

Pre-test and Post-test Paired Sample Results

Test Item #	$t$ -value	Significance	$N$
1	1.000	.328	24
2	3.375	.003*	19
3	4.229	.000*	23
4	1.735	.096	24
5	4.287	.000*	22
6	2.160	.042*	22
7	1.908	.069	23
8	4.567	.000*	20
9	2.932	.009*	20
10	1.000	.328	23
Total Correct	7.515	.000*	24

$N$  represents the number of paired pre- and post-test items used to compute the results

\* Denotes the items with a significant difference  $< 0.05$ .

The 24 subjects who completed both the pre-test and the post-test showed a significantly improved knowledge level from the pre-intervention test to the post-intervention test with a mean overall score improvement from fifty percent to ninety percent ( $t = 7.515$ ,  $p < 0.05$ ).



## Research Question Two

The second question in this study was: What is the patient's perception of the usefulness of this type of instruction?

The subjects were asked to rate the CAI program's usefulness, efficiency, user friendliness, content relevancy, and impact on feelings regarding the upcoming procedure on a scale of one to seven. A rating of one indicated 'not useful at all,' 'not efficient at all,' 'very difficult,' 'not relevant at all,' and 'more concerned' respectively. A rating of seven indicated 'very useful,' 'very efficient,' 'not difficult,' 'very relevant,' and 'less concerned,' respectively.

Of the 22 responses to the usefulness of the CAI, 20 respondents circled the number seven, representing "very useful" (mean = 6.86, S.D. = 0.47); one rated it as a six, and one rated it as a five. The time efficiency of the program was rated by 12 of the participants as a seven (very efficient), two participants rated it a three, meaning not very efficient. The mean of 5.77 (S.D. = 1.54) on the seven-point scale reflected an overall efficiency of time utilizing the program. Twenty of the 22 respondents rated the difficulty in use of the program as a seven (not difficult at all), resulting in a mean of 6.91 and standard deviation of 0.29; two participants rated the difficulty at six. The content relevancy was evaluated by 19 of the 22 participants as a seven, being very relevant, with the lowest rating as a five. The mean scale rating for this category was 6.82 (S.D. = 0.50).

The 21 responses to the question regarding impact of the program on one's feelings resulted in a mean of 6.29 and a standard deviation of 1.38. A rating of seven, which 15 respondents chose, reflected less concern about the upcoming

procedure after viewing the CAI. However, increased variability of responses was apparent for this question with a rating range of two to seven. One participant's rating of two indicated the CAI increased concerns. Two respondents chose a rating of four, one chose a rating of five, and two chose a rating of six.

Nonetheless, all 21 respondents selected 'yes' when asked if they would recommend this program for future use with dysplasia and colposcopy clients.

Six participants elected to comment in the provided space as to the positive or negative aspects of the computer-assisted education. The comments were:

1. "Very user friendly"
2. "I think the program was very helpful to me and my spouse"
3. "I was nervous and the film helped me to relax. Very helpful. Thank you."
4. "Informative, but very long. A lot of information. Would be beneficial to end program or pick area of interest, for example, had to hear all about all procedures except the one I was having. They don't do cryotherapy here anymore so I didn't need to learn about it."
5. "Easy to understand / simple. Informative."
6. "Positive- very helpful. Put me at ease."

This chapter discussed the data analysis each research question as it related to sample characteristics, the effectiveness of CAI and the participants' perception of its usefulness. Recommendations and comments by the participants were also noted.

## CHAPTER V: SUMMARY

## Introduction

The purpose of this study was to evaluate the effectiveness of computer-assisted instruction on dysplasia and colposcopy. The quasi-experimental study measured the participants' knowledge before and after an educational intervention. A ten-item pre- and post- multiple-choice exam was used to measure knowledge. Additionally, the participants' perception of the usefulness of the computer-assisted instruction was assessed with a nine-item questionnaire accomplished at that same time. Chapter Five will present a summary of the findings, the limitations, and the implications of this study. Suggestions for further research will also be explored.

Patient education is an essential part of a patient's comprehension and decision making regarding one's health. Health educators and providers have used pamphlets, books, videotapes, classes, support groups, and other educational tools in the hope that knowledge will be improved for the patient. The ever-increasing use of computers in everyday life makes the computer-assisted instruction seem to be a natural fit for educators. This study sought to determine the effectiveness of this type of instruction in the area of dysplasia and colposcopy.

The theoretical framework for this study included Orem's (1995) self-care model and the adult learning theory. Orem's model discusses the contribution to self-care by the patient through deliberate actions that are goal directed or result seeking. Orem believes that self-care is an adult's continuous responsibility to the individual's health and well being. Patient education is an essential nursing

function. The modality of the CAI offers another avenue to pursue this vital component of the patient's care. The colposcopy patient has demonstrated proactive self-care by having the screening test done and result seeking behavior by following-up on the abnormal screening test with the colposcopy. Increased knowledge of the dysplastic changes and therapeutic options available to the colposcopy patient facilitates the resumption of self-care and well being of the individual.

Adult learners are responsible for their own lives and need to be recognized as having varied life experiences, internal motivations, and individual goals when seeking information (Slotnick, Pelton, Fuller, & Tabor, 1993). Individual participation, responsibility, and flexibility are required for optimal adult learning to occur. CAI offers the adult learner the ability to complete the program at a comfortable pace, the responsibility of the individual to complete the program, and the flexibility of convenient accomplishment of the program as well as interactive feedback throughout the program. This particular CAI program is tailored to meet the learning needs of the participants.

### Conclusions

#### Patient Knowledge Levels with CAI Use

Although there are numerous studies regarding the educational effectiveness of CAI, there are no published studies specific to the patient education effectiveness of computer-assisted instruction in the area of colposcopy and dysplasia. The literature is overwhelming regarding the importance of patient education and the

impact on patient compliance as well as on outcome. Many studies have been done demonstrating the usefulness of computer-assisted instruction in many other areas of health care patient education.

The overall improvement of correct answers from the pre-test mean scores of 60% to the post-test mean scores of 90% lead this researcher to conclude the intervention of the CAI was helpful in improving the knowledge level of the respondents. There was a statistically significant increase in understanding of specific items related to terminology, the possible side effects of the procedure, biopsy results as well as the need for a biopsy, and possible treatment options after viewing the program on dysplasia and colposcopy. Table 3 demonstrates the significant differences of individual items as well as overall test scores.

#### The Patients' Perception

After analysis of the data related to the respondents' demographics, this researcher concluded that the majority of the women surveyed were comfortable with using a computer as evidenced by the data in Table 1. The high rating by the respondents as to the usefulness of the computer-assisted instruction and the unanimous recommendation for its future use with dysplasia and colposcopy clients lead this researcher to deduce that the program is helpful to the patient.

In the remarks section, five patients responded positively with comments noting the program's ease of use, its helpfulness, and the improvement of the individuals' anxiety. These remarks coupled with the survey's high marks in the areas of content relevancy, impact on feelings, and ease of use of the program direct this researcher to infer the program aids with affect as well as knowledge.

The comment pertaining to the program's length and specific inapplicable content speaks directly to the program's adaptability, which is not in the realm of this study.

### Limitations

This study sought to determine if there was a significant difference in the patient's knowledge of dysplasia and colposcopy after viewing computer-assisted instruction. A limitation of the study related to sample size. Due to missing responses, the sample size for paired statistics ranged from nineteen to twenty-five and the data available related to demographics ranged from seventeen to twenty-two. Additionally, this study was limited to one medical treatment facility, which provided care to only eligible individuals qualified for military care, thereby limiting the generalizability of the findings of the sample. The other limitations imposed were the participant's age of 18 or older, the ability to read and write English, and literacy level of at least seventh grade.

### Recommendations for Further Research

A replication of this study to include populations other than those associated with the military would allow more generalizability of the study's findings. The pre- and post-intervention tool could include the option of 'don't know' to decrease the number of missing data. The possible use of another computer program addressing dysplasia and colposcopy, if available, may address the issue of adaptability with the program's use. The providers' perception of usefulness

and observations of patient comprehension may validate the use of CAI from that approach. The inclusion of participants under the age of 18 would increase the generalizability also.

#### Significance for Practice

The results of the significant improvement of test scores after viewing the computer-assisted instruction as well as the positive written responses and ratings by the respondents document the use of CAI in the clinical setting of dysplasia as a very beneficial patient education tool. Improved patient comprehension has been shown in other studies to alleviate the fears of the patient and family as well as improve compliance with follow-up care. With provider appointment times being decreased, the CAI can provide consistent, general information to the patient prior to the provider encounter and allow a more focused, patient-directed discussion before the procedure.

The increasing use of computer technology in everyday life caters to the increased use of this format for patient education. The adaptation of this type of instruction in the clinical setting has been shown to be an effective educational methodology.

#### Summary

In order to optimize the knowledge of an individual's health, the utilization of varying avenues of education needs to be offered. Computer-assisted instruction has been demonstrated to improve the comprehension and the positive affect of the patients who have completed this type of education. Specifically, CAI in the arena of dysplasia and colposcopy lends itself to increased knowledge and

decreased concerns regarding the procedure. It was an accepted and recommended method of instruction by colposcopy patients who used the program. The CAI gives consistent information regardless of the provider or the type of clinic or the location of the facility.



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## APPENDICES

Appendix A- Permission to Use Tool

Appendix B - Example of Patient Printout

Appendix C - Pre-/ Post-Test on Dysplasia, Colposcopy, and Follow-up Care

Appendix D - Evaluation of Knowledge Tool

Appendix E - Utility of Computer-Assisted Instruction Program

Appendix F - Participant Information

Appendix G - Institutional Review Board Approvals

## APPENDIX A

### Permission to Use Tool

## Appendix A

### Permission to Use Tool

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**From:** jomiller@att.net [ **Save address** ]

**To:** Micheal Talarico <miket@acogpace.com>

**Subject:** Re: ACOG PACE modules

**Date:** Tue, 01 Feb 2000 01:37:23 +0000

Hello Mr. Talarico-

Thank you for your support in getting the PACE modules for my study. I was given the 'go ahead' after talking with my research professor and the school's legal advisor regarding the possible publication of the results. There should be no problem getting a copy of my findings to you as long as the Department of Defense is not used to endorse the product.

If you have any information or references that would validate this module as a reliable tool, I would greatly appreciate it. And if you don't, it won't be a problem.

Any other information or concerns you may have, please let me know. Again, thank you for all the assistance you've given me.

Sincerely,

Jody Miller

> Hi Jody,  
>  
> I just wanted to touch base and let you know that I have been given the go  
> ahead to send you your complimentary three PACE modules....  
>  
> I have however been asked to first verify that we will be able to receive  
> copy of your findings? Then depending upon your results we may wish to  
> contact you for permission to publish!  
>  
> If this is okay please let me know at your earliest convenience so I can  
> mail you the ACOG PACE(tm) Software.  
>  
> Sincerely,  
>  
> Micheal Talarico  
> ACOG PACE(tm) Sales and Support  
>  
>

## **APPENDIX B**

### **Example of Patient Printout**



## Appendix B

### EXAMPLE OF PATIENT PRINTOUT

#### Abnormal Pap Test Result: Dysplasia (SIL) v1.0 PACE Patient Response Sheet

Thank you for viewing "Abnormal Pap Test Result: Dysplasia (SIL)." This is a summary of what you heard and saw when you viewed the program on 3/13/2000 at 4:36 PM.

You gave your name as - -. You gave your age as -.

You indicated that you think a Pap test is 100% accurate. You were told that this is not correct.

You indicated that you did not know that the Pap test has saved thousands of lives. Actually, it has because it has made it possible to detect and treat cervical abnormalities BEFORE they become a cancer that could spread to other parts of the body.

You indicated that you did not think the Pap test was still valuable, even though it is only an indicator of possible problems. Actually, a Pap test is still the best method for finding conditions that lead to cervical cancer.

You were shown how your doctor collected cells from just inside your cervix that were then sent to a laboratory for examination.

You were told that the cells were classified as normal or abnormal; abnormal cells were further classified by the degree of their abnormality. The results were sent back to your doctor.

You were reminded that this result told your doctor about ONLY those cells that were collected during the Pap test and examined by the specialist in the laboratory.

You were reminded that a Pap screening test is not 100 percent accurate, and that, as with any lab tests, false or inaccurate results are possible.

You were told that false negative results are abnormal changes reported as normal and that this occurs in 10-20% of all Pap tests. However, since your Pap test showed an abnormal finding, it is not a false negative result.

You were told that false positive results are normal changes reported as abnormal and that this type of result is rare. Furthermore, a positive Pap test may inaccurately report the actual degree of abnormality in the cervical cells.

You were told:

- that your doctor will probably perform additional tests in order to make sure that your result is not a false positive.
- that there are three kinds of abnormal Pap test results: ASCUS (Atypical squamous cells of unknown significance), Dysplasia (sometimes called SIL), and cancer.

You were told that the cells from your Pap test were classified as showing Dysplasia. Dysplasia is sometimes called SIL, or squamous intraepithelial lesion, and is sometimes called CIN or cervical intraepithelial neoplasia.

You were reminded that Pap tests often permit early detection of cervical abnormalities which can lead to cancer and that when these abnormalities are detected early, they can be treated more easily and with greater success.

You were told how cells grow in the cervix, slowly moving from the bottom layer to the surface of the cervix. When they reach the surface, they are shed as a normal process. It is these cells that are examined during the Pap test.

Initials: \_\_\_\_\_

- - 3/13/2000 4:36 PM

Abnormal Pap Test Result: Dysplasia (SIL) v1.0  
PACE Patient Response Sheet

You were told that

- Dysplasia is a non-cancerous condition that occurs when normal cells on the surface of the cervix are replaced by a layer of abnormal cells.
- this condition can be found in women of all ages, but is being found more frequently in young women and teenagers.
- Dysplasia is NOT the same as cancer. However, Dysplasia can become more severe and in some cases can lead to cancer.

You were told that there are different degrees of severity of Dysplasia and different ways of describing the severity. Further evaluation and treatment will depend on the severity of your Dysplasia.

You were told that if this is the first time your Pap test has shown Dysplasia, you will probably be advised to have repeat Pap tests every 3 to 6 months, and that most mild degrees of Dysplasia or low grade SIL go away without treatment.

You were told that your doctor might recommend diagnostic tests if other factors place you at higher risk for more serious disorders.

You were told that you may be advised to have a diagnostic test if:

- this is a repeat Pap test that again shows Dysplasia, or
- your Dysplasia has reached a more advanced stage when it is detected.

You were told that a diagnostic procedure is a special test used to confirm the results of a screening test (such as a Pap test). Diagnostic procedures may be needed to determine whether only the surface cells are affected, or whether the deeper tissues are involved.

You were told that there are two diagnostic procedures that your doctor can use to determine what your abnormal Pap test means: colposcopy and biopsy.

These procedures may be done at the same time or you may have a colposcopy first and not need a biopsy. Or you may just have a biopsy.

You were told that colposcopy is a procedure often done before a biopsy; colposcopy allows a doctor to look at your cervix using a special magnifying instrument with an attached light. This allows your doctor to detect problems of the cervix that cannot be seen without this magnification.

You indicated that you do not know where your cervix is located.

You indicated that you wished to see a diagram showing your reproductive system.

You were shown an animation of the colposcopy.

You were told that a colposcopy is usually done in your doctor's office. Sometimes your doctor will send you to a clinic or to another doctor for the procedure.

You were told that colposcopy is a safe procedure; you might have a burning sensation from the vinegar solution, but this should go away soon. You were told to contact your doctor if the burning sensation does not go away.

Initials: \_\_\_\_\_

- - 3/13/2000 4:36 PM

Abnormal Pap Test Result: Dysplasia (SIL) v1.0  
PACE Patient Response Sheet

You were told that if the doctor sees something during colposcopy which requires more investigation, you will be asked to have a cervical biopsy. In this procedure, small pieces of tissue are removed from your cervix. A routine biopsy is usually done in the doctor's office or clinic.

You were told that a routine biopsy doesn't take much time, and causes only minor discomfort such as mild cramping or a pinching sensation.

You were told that there are two types of cervical biopsy. In a punch biopsy, a small piece of tissue is removed from the cervix. In the other, called an endocervical curettage, a small instrument is used to gently scrape tissue from inside the cervix.

You were told that sometimes a larger piece of tissue is needed to establish a diagnosis. In this case, a cone biopsy is done during which a cone-shaped wedge of tissue is removed from the cervix. A cone biopsy can be done by a number of methods and often requires a general anesthetic. It is done either in an outpatient surgical setting or in a hospital.

You were told that the tissue sample will be sent to a lab for examination by a specialist, and that these results may not be available for several days. You were told that the results of the biopsy will determine what treatment, if any, is appropriate for you.

You were told that it is common to have some bleeding following a biopsy. Sometimes a liquid designed to stop bleeding is applied to the biopsy area. If this is done, you will probably experience a thick, dark discharge for a few days.

You were told that if you experience heavy bleeding—for example, bleeding as heavy as a menstrual period—you should call your doctor.

You were told that appropriate treatment for your Dysplasia will depend on the kind you have and its severity, after it has been confirmed by the results of your biopsy.

You were told that if the results of your biopsy confirm a mild abnormality, follow-up and treatment will depend to a great degree on your preferences. More than half of the Dysplasia found by a Pap test gets better without treatment.

You were told that some of these abnormalities do get worse, and you and your doctor may agree to treat the problem right away. If the abnormality persists after a year, or if it gets worse, treatment is indicated.

Sometimes a biopsy confirms that a more serious abnormality is present, such as a more severe degree of Dysplasia or the presence of cancer cells. Sometimes all the abnormal tissue is removed during biopsy, and no further treatment is required at this time.

You were told that it is important to remove all the abnormal tissue.

If your biopsy shows that cancer cells are present, but only within the surface layers of the cervix, this is called CIS or carcinoma in situ. This means that the cancer cells have not spread. Treatment of this type of cancer is highly likely to be successful.

Disorders of the cervix are treated with minor surgery that does NOT remove the cervix but does remove the affected tissue and leaves a clean surface free of abnormal cells. In 9 out of 10 women, minor surgery completely removes the abnormal cells. You were reminded that it is very important that you have frequent pap tests—usually

Initials: \_\_\_\_\_

- - 3/13/2000 4:36 PM

3

Abnormal Pap Test Result: Dysplasia (SIL) v1.0  
PACE Patient Response Sheet

every three months for the next year--to make sure that the abnormal cells have not returned.

You were told that the following methods can be used to remove abnormal tissue from the surface of the cervix in the affected area: Cryotherapy, laser surgery, loop electrode excision procedure (LEEP), and Conization.

You chose to learn more about: Cryotherapy, laser surgery, loop electrode excision procedure (LEEP), and Conization.

You were told that in Cryotherapy, an instrument is used to freeze the affected tissue so that it is destroyed. This procedure takes only a few minutes, does not require an anesthetic, and is commonly done in a doctor's office. You may experience mild cramping during the procedure and can expect a heavy, watery discharge for about two weeks afterwards.

You were told that laser surgery uses a high intensity beam of light to destroy abnormal tissue. This procedure requires special equipment and special precautions. As a result, it may not be available in your doctor's office. The procedure takes only a short period of time, and often requires a local anesthetic, but not usually a general anesthetic. You may have a small or moderate amount of bleeding and discharge for about two weeks following the procedure.

You were told that the loop electrode excision procedure (LEEP) uses a thin wire loop electrode through which a carefully regulated electric current is passed, cutting out the abnormal area of the cervix. An advantage of this procedure is that the removed tissue is not destroyed and can be examined under a microscope. Occasionally troublesome bleeding occurs which may require stitches and you may have a mild discharge for about two weeks following the procedure.

In Conization, a wedge-shaped portion of the cervix which appears abnormal can be removed for biopsy and examined under a microscope. If the tissue is abnormal, the affected area of the cervix may have already been removed during the cone biopsy. This procedure can thus be used for both diagnosis and treatment. Conization requires a general or regional anesthetic and is done in a surgical setting. A small amount of bleeding and discharge is usual for five to ten days following the procedure, but the risk of significant blood loss during the procedure is small. Occasionally, troublesome bleeding occurs following the procedure and requires further treatment.

The actual choice of procedure will depend on the degree of abnormality that you have, the size and location of the affected area of the cervix, and the preferences of you and your doctor.

You were told that some patients may choose to have a hysterectomy--the surgical removal of the uterus and cervix. You and your doctor may choose hysterectomy if you have other gynecological problems that are indications for removal of the uterus or abnormalities that cannot be treated adequately with other methods.

However, if you wish to have children in the future, hysterectomy is not appropriate.

You were told that there are some risks that all these procedures have in common:

- infection can develop
- surrounding structures such as the vagina or the bladder might be damaged
- scarring of the cervix can occur
- rarely, surgery may result in the cervix being unable to support or sustain subsequent pregnancies.

In addition, there are important risks related to anesthesia. Even though complications from an anesthetic are

Initials: \_\_\_\_\_

- - 3/13/2000 4:36 PM

4

Abnormal Pap Test Result: Dysplasia (SIL) v1.0  
PACE Patient Response Sheet

unusual, they do occur. These include minor reactions such as temporary itching, and quite serious effects, including, in rare instances, death. Be certain to tell your doctor about any previous experience you may have had with anesthetics.

You indicated that you have had a reaction to an anesthetic during an operation.

You indicated that you have had a reaction to an anesthetic at the dentist's.

You indicated that you have had a reaction to an anesthetic during childbirth.

You indicated that you were ready to finish.

You were reminded that your doctor has further information, including pamphlets, if you are interested.

Thank you for watching this program. Please sign one copy of this printout to be kept with your medical records. You will receive another copy to keep.

This is a true record of what I saw and heard in the program called "Abnormal Pap Test Result: Dysplasia (SIL)."

The patient needed help in order to continue viewing the program.

ACOG PACE was developed by the American College of Obstetricians and Gynecologists to assist practitioners in informing patients of the material risks and benefits of specific procedures and treatments. The information and recommendations in this program reflect scientific and clinical knowledge as of the release date and may change. In addition, variations of practice, taking into account the needs of the individual patient, resources, and limitations unique to the institutions or types of practice, may warrant alternative treatment or procedures to the recommendations outlined in this program. Therefore, this program should not be construed as dictating an exclusive course of treatment or procedure.

\_\_\_\_\_  
Name (please print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Patient's Signature

DO NOT DESTROY. FILE IN PATIENT'S MEDICAL RECORD.

## APPENDIX C

Pre-/ Post-Test on Dysplasia, Colposcopy, and Follow-up Care

## Appendix C

### PRE- / POST- TEST ON DYSPLASIA, COLPOSCOPY, AND FOLLOW-UP CARE

Please circle above: PRE if you are taking this before the computer instruction and  
POST if you are taking this after the computer instruction.

Please circle the answer which best completes the statement. Choose only one answer.

1. The Pap test is:
  - a. 100% accurate
  - b. used to detect cervical abnormalities
  - c. used to detect sexually transmitted diseases
  - d. no longer necessary
2. Dysplasia is:
  - a. abnormal cervical cells
  - b. also referred to as CIN (cervical intraepithelial neoplasia)
  - c. also referred to as SIL (squamous intraepithelial lesion)
  - d. all of the above
3. A tissue biopsy:
  - a. is only done if the provider sees something that needs further investigation
  - b. results will be obtained immediately after procedure
  - c. causes severe cramping and heavy bleeding after the procedure
  - d. takes a lot of time to complete
4. The solution applied to the cervix and vaginal walls:
  - a. is an oil solution
  - b. is a vinegar solution
  - c. may cause a mild burning sensation
  - d. b & c
5. If a biopsy is needed, the types of biopsies done during a colposcopy are:
  - a. a punch biopsy (a small piece of tissue is removed from the cervix)
  - b. an aspiration biopsy (tissue is obtained by suction from a syringe)
  - c. endocervical curettage or ECC (tissue is obtained by gentle scraping inside the cervix with a small instrument)
  - d. a & c
6. The biopsy results:
  - a. will determine what treatment, if any is appropriate for you
  - b. may not be available for several days
  - c. will be sent to a lab for examination by a specialist
  - d. all of the above

7. Following a biopsy, it is common to have:
  - a. a little bleeding
  - b. a lot of bleeding
  - c. foul smelling discharge
  - d. no discharge
8. Treatment after a colposcopy and biopsy may include:
  - a. a repeat Pap
  - b. a LEEP
  - c. a conization
  - d. all of the above
9. Some risks which may be associated with the follow-up procedures include all EXCEPT:
  - a. infection
  - b. damage to surrounding structures such as the vagina or the bladder
  - c. reactions to anesthesia
  - d. pain with intercourse
10. In 9 out of 10 women, minor surgery completely removes the abnormal cells. How often should you have a follow-up evaluation to make sure that the abnormal cells have not returned?
  - a. every month for one year
  - b. every 3-6 months for one year
  - c. every year for 2 years
  - d. every 5 years



## APPENDIX D

### Evaluation of Knowledge Tool

## Appendix D

### Evaluation of Knowledge Tool

This evaluation tool was designed to evaluate the effectiveness of computer-assisted instruction on dysplasia and colposcopy. This tool will be administered as a pre- and a post-test to consenting patients before and after completing the ACOG PACE™ program. Included is the information covered in the program.

Please rate each question on the content validity using the following scale:

1=not relevant 2=somewhat relevant 3=relevant 4=very relevant

Question #

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

Please comment on the content and applicability of the questions. Any suggestions for change are appreciated.

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Thank you for your time in completing this evaluation.  
Major Jody Miller, USAF, NC USUHS FNP Student

## APPENDIX E

### Utility of Computer-Assisted Instruction Program

## Appendix E

### Utility of Computer-Assisted Instruction Program On Dysplasia and Colposcopy

Using a scale of 1 to 7, please respond to the following questions regarding the usefulness of the computer-assisted instruction (CAI) on dysplasia and colposcopy.

1. How useful was the CAI to you?

Not at all useful

1      2      3      4      5      6

Very useful

7

2. How time efficient was the CAI?

Not efficient at all

1      2      3      4      5      6

Very efficient

7

3. How difficult was it to follow the CAI?

Very difficult

1      2      3      4      5      6

Not difficult at all

7

4. Was the CAI content relevant to your situation?

Not relevant at all

1      2      3      4      5      6

Very relevant

7

5. How did the CAI impact your feelings about the upcoming colposcopy?

More concerned

No change

Less concerned

1      2      3      4      5      6      7

6. When did you complete the CAI? \_\_\_\_\_ immediately before the colposcopy  
OR \_\_\_\_\_ # of days prior to the colposcopy (please indicate)

7. Approximately how long did it take to complete the program ? \_\_\_\_\_ minutes

8. Would you recommend this program for future use with dysplasia and colposcopy clients? Yes No

9. Any suggestions or comments (positive or negative) regarding the computer-assisted education is welcomed. Thank you again for your time.

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**APPENDIX F**  
**Participant Information**

## Appendix F

### Participant Information

(Please do not include your name on any form in this study except the consent form which is kept separately.)

1. Estimate the number of hours per week you use the computer at:
  - a. Work \_\_\_\_\_
  - b. Home \_\_\_\_\_
2. Estimate the number of hours per week you use the computer for
  - a. Recreation \_\_\_\_\_
  - b. Education \_\_\_\_\_
  - c. Communication with friends and family \_\_\_\_\_
3. How many years of education have you completed? \_\_\_\_\_
4. Using the scale from 1 to 7, please rate your level of comfort with using a computer.

Not at all							Very
comfortable							Comfortable
1	2	3	4	5	6	7	

## APPENDIX G

### Institutional Review Board Approvals

Appendix G



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 89TH AIRLIFT WING (AMC)

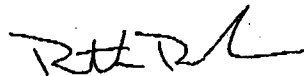
19 June 2000

MEMORANDUM FOR USUHS  
ATTENTION: MAJ MILLER

FROM: 89 MDG/SGH  
1050 West Perimeter Road  
Andrews AFB, MD 20762-6600

SUBJECT: Proposed Clinical Investigation Research Protocol-Human Exempt

1. Your protocol "Application of Computer Assisted Colposcopy Education" was unanimously approved by the Malcolm Grow Medical Center (MGMC) Institutional Review Board (IRB) through Expedited Review and determined to be a Human Exempt study on 14 Jun 00.
2. Your research study has been assigned the number FMG2000-0008H. You may begin your study. Please remember that any subject's personal ID needs to be coded during the data collection in order to protect privacy and any indirect linkage must be destroyed after data collection is complete. The IRB approval is only for MGMC. If the study is to be conducted at other sites, IRB approval from that institution must be obtained.
3. It is required that an annual/final progress note be submitted to the IRB and should be submitted nine months after approval of the study. This will allow time for review and approval of the annual report. The report should be submitted to the IRB. Failure to submit the report will result in closure of the study. The format for the report must follow the format as described in the Clinical Investigator's Guide.
4. Any abstracts or papers published during the study should also be enclosed, however, they cannot be accepted in place of an annual or final report as per federal regulations.
5. If you plan to PCS or retire prior, you must either close the study with a final report; or submit a letter signed by the new primary investigator that they will resume responsibilities accompanied by a progress note if the last progress note longer than 3 months ago.
6. Please submit protocol to TSgt Huff, 89 MDG/SGATR; 1050 West Perimeter Road; Andrews AFB MD 20762. Please call 240-857-6062 or FAX 240-857-4093 or email [thule.huff@mgmc.af.mil](mailto:thule.huff@mgmc.af.mil) if you have any questions.
7. We wish you the best in your research efforts. Thank you for your cooperation with the above IRB regulations and for participation in research at the 89th Medical Group.

  
RUTH A. ROBINSON, Col, USAF, MC  
Chief of the Medical Staff, 89th Medical Group

AMC—GLOBAL REACH FOR AMERICA



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES  
4301 JONES BRIDGE ROAD  
BETHESDA, MARYLAND 20814-4799

Notice of Project Approval  
Original

Protocol Information:

Project Number: T061BS-01 Sponsor ID: T061BS  
Principal Investigator: Jody D. Miller  
Department: GSN - Graduate School of Nursing  
Sponsor: Uniformed Services University of the Health Sciences  
Project Type: USUHS - Graduate Nursing Students  
Title: Application of Computer Assisted Colposcopy Education

Project Period: 08/01/2000 - 07/31/2001  
Current Activity Period: 08/01/2000 - 07/31/2001

Assurance and Progress Report Information:

Name	Approval Type	Status	Approval Date	Due Date	Forms Rcvd
IRB	CR - Concurrence Review	A - Approved	07/19/2000	N/A	N/A
Ext Human	ER - Exempt Review	A - Approved	01/14/2000	N/A	N/A

Remarks:

This Notice of Project Approval establishes that the Office of Research has reviewed and approved your project. Funding for this project will be provided separately through Lynn Miller in the Graduate School of Nursing.

Notice: Your approved thesis will serve as your final report.

I have reviewed the project described above and approve the research for this project. However, this action does not imply that the appropriate assurances have been obtained nor should work begin on this project until all appropriate assurances are obtained. No funding is provided for this activity period.

Questions regarding this award should be directed to Mary Kay Gibbons at 301-295-9817 in the Office of Research.

  
Michael N. Sheridan, Ph.D.

Acting Vice-President for Research

cc:  
Lynn Miller  
File



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES  
F. EDWARD HEBERT SCHOOL OF MEDICINE  
4301 JONES BRIDGE ROAD  
BETHESDA, MARYLAND 20814-4799



July 19, 2000

MEMORANDUM FOR JODY D. MILLER, GRADUATE SCHOOL OF NURSING

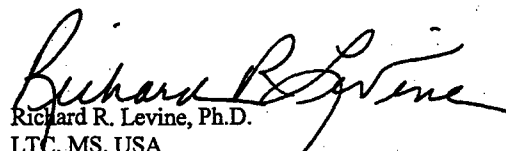
SUBJECT: IRB Approval of Protocol T061BS-01 for Human Subject Use

In accordance with USUHS Instruction 3201 and the Memorandum of Understanding for Clinical Affiliation between the Uniformed Services University of the Health Sciences and the U.S. Air Force Surgeon General designating the Malcolm Grow Medical Center (MGMC) as a clinical affiliate, USUHS accepts the review and **EXEMPT** approval by the Committee for the Protection of Human Subjects (CHPS) for the research protocol entitled "*Application of Computer Assisted Colposcopy Education*" under your direction.

The purpose of this study is to study to compare the knowledge level of the patient prior to completion of computer-assisted instruction with that of the patient after completion of the computer-assisted instruction regarding colposcopy and cervical dysplasia. The IRB understands that this study involves completion of an anonymous demographic questionnaire, viewing of a computer program on dysplasia and colposcopy, and completion of pre- and post-instruction questionnaires.

You are required to submit amendments to this protocol, changes to the consent form, adverse event reports, and other pertinent information relative to human subject use for this project to this office for review. It is your responsibility to maintain an accurate and accessible file of all consent forms of participating human subjects.

If you have any questions regarding human subject use, please call me at 301-295-3303.

  
Richard R. Levine, Ph.D.  
LTC, MS, USA  
Director, Research Programs and  
Executive Secretary, IRB

cc: Director, Research Administration